Parts Lists and Wiring Diagram

Tools needed:

1) Sponge Mop -- Very useful for folding the arms when you don't want to get a ladder.

2) Superclamp -- For putting the lugs on the ends of wire.

3) Volt/Ohm meter

You may need a soldering iron.

Simple test board parts:

1) 5A circuit breaker (120 volts)

2) Power cord with plug. (Think extension cord with one end cut off)

3) Light switch & electrical box for switch.

4) Push button switch

5) DPDT toggle switch (120 VAC rated) -- DPDT = Double Pole, Double Throw. Double throw means that the switch controls two circuits. Double throw means that the switch has contacts for both the "On" and "Off" sides. The switch will have 6 connection points.

6) Box to house the above.

7) Terminal block (a place to connect the wires.)

8) Lugs to fit the switches and terminal block.

9) #12 Gage or thicker wire. Stranded makes it much easier to use. (Not 100% sure of the gauge here.)

10) 1/4 plywood board on which to mount stuff. (Or whatever you wish to use.)

11) Cable ties (keep things neat)

Note: I'm using 9 pin Molex connectors to connect the light to test fixture and the controller.

I would recommend that you do the same, but it's not required.

Optional: 3 sets (Male, female) of 9pin molex connectors. (Frys, Radio Shack)

Controller parts list:

1) Raspberry PI model B, B+ or similar. (https://www.adafruit.com/products/998) (Anything that's not the model 0 will work.)

2) 5V power supply for the Raspberry PI. These are USB chargers capable of generating 1A or more of power. They have some that you can get with the Raspberry PI, but you can use any charger. (https://www.adafruit.com/products/501)

3) Micro SD card. 2GB or better. (You can hardly find less that 8GM now, but if you have an old one lying about we can use it.)

4) Raspberry PI console cable. (https://www.adafruit.com/products/954) Note: Do not connect the red wire of the console cable.

5) Optional: USB WiFI dongle. (Cheap and let you connect remotely to your PI)

6) Numto Labs USB 16 Relay board. (http://numato.com/16-channel-usb-relay-module/)

7) 12v power for the relay board. (Wall wart type will do) This will also power the direction relays. (https://www.sparkfun.com/products/9442)

8) 5v power for the relay board. (The relay board has the option to run off the USB power.

Do not use this option with a low powered board like the Raspberry PI. We need a separate power supply) (https://www.sparkfun.com/products/12889)

9) Quantity 2: 12v relay capable of switching 110V at 5Amps. (You may need to purchase a base for the relay so you can use lugs and not have to solder on the wires) (Frys)

10) Quantity 2: Didoes (Get more -- they are cheap and you may blow up a few.) Type: 1N4005

11) Pushbutton for starting the cycle.

Board to mount components on, box for the button and the other mechanical stuff.

Software required: Terminal program for your PC. Tera Term comes to mind, but I'm not a PC guy.